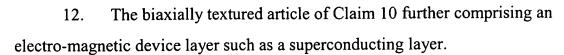
## We claim:

- 1. A biaxially textured article comprising a biaxially textured substrate having thereon at least one epitaxial nitride layer,
- 2. The biaxially textured article of Claim 1 such that the substrate has a {100}<100> orientation texture.
- 3. The biaxially textured article of Claim 1 wherein the substrate is a biaxially textured metal or alloy.
- 4. The biaxially textured article of Claim 1 wherein the substrate is biaxially textured Ni or a Ni alloy.
- 5. The biaxially textured article of Claim 1 wherein the nitride layer is selected from a group comprising of but not limited to TiN, CeN, ZrN, HfN, VN, NbN, NdN, LaN, YN, and AIN.
- 6. The biaxially textured article of Claim 1 further comprising at least one additional nitride layer.
- 7. The biaxially textured article of Claim 1 further comprising an oxide buffer layer consisting of but not limited to MgO, CeO<sub>2</sub>, YSZ, LaAlO<sub>3</sub>, SrTiO<sub>3</sub>, LaNiO<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, RE<sub>2</sub>O<sub>3</sub>.
- 8. The biaxially textured article of Claim 1 further comprising an electro-magnetic device layer such as a superconducting layer.
- 9. The biaxially textured article of Claim 7 further comprising an electro-magnetic device layer such as a superconducting layer.
- 10. The biaxially textured article of Claim 1 wherein the substrate is a single crystal metal substrate.
- 11. The biaxially textured article of Claim 10 further comprising an oxide buffer layer consisting of but not limited to MgO, CeO<sub>2</sub>, YSZ, LaAlO<sub>3</sub>, SrTiO<sub>3</sub>, LaNiO<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, RE<sub>2</sub>O<sub>3</sub>.



- 13. The biaxially textured article of Claim 12 further comprising an electro-magnetic device layer such as a superconducting layer.
- 14. A biaxially textured article comprising a biaxially textured substrate having thereon at least one epitaxial layer of composition M1<sub>x</sub>M2<sub>y</sub>N, where M1 and M2 refer to metals selected from a list comprising of but not limited to Ti, Ce, Y, Zr, Hf, V, Nb, Nd, La, and Al, and x and y refer to the atomic compositions of the two metals respectively.
- 15. The biaxially textured article of Claim 14 such that the substrate has a {100}<100> orientation texture.
- 16. The biaxially textured article of Claim 14 wherein the substrate is a biaxially textured metal or alloy.
- 17. The biaxially textured article of Claim 14 wherein the substrate is biaxially textured Ni or a Ni alloy.
- 18. The biaxially textured article of Claim 14 further comprising an oxide buffer layer consisting of but not limited to MgO, CeO<sub>2</sub>, YSZ, LaAlO<sub>3</sub>, SrTiO<sub>3</sub>, LaNiO<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, RE<sub>2</sub>O<sub>3</sub>.
- 19. The biaxially textured article of Claim 14 further comprising an electro-magnetic device layer such as a superconducting layer.
- 20. The biaxially textured article of Claim 18 further comprising an electro-magnetic device layer such as a superconducting layer.
- 21. The biaxially textured article of Claim 15 wherein the substrate is a single crystal metal or ceramic substrate.
- 22. The biaxially textured article of Claim 21 further comprising an oxide buffer layer consisting of but not limited to MgO, CeO<sub>2</sub>, YSZ, LaAlO<sub>3</sub>, SrTiO<sub>3</sub>, LaNiO<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, RE<sub>2</sub>O<sub>3</sub>.

- 23. The biaxially textured article of Claim 21 further comprising an electro-magnetic device layer such as a superconducting layer.
- 24. The biaxially textured article of Claim 22 further comprising an electro-magnetic device layer such as a superconducting layer.
- 25. A method of preparing a biaxially textured substrate comprising the steps of:
  - providing a biaxially textured substrate having a surface; and,
  - depositing onto said surface, with or without the presence of nitrogen gas, an epitaxial layer of a metal nitride, containing one or more metals in each layer selected from a group consisting of but not limited to Ti, Ce, Zr, Hf, V, Nb, Nd, La, and Al.
- 26. A method in accordance with Claim 25 wherein said biaxially textured substrate has {100}<100> orientation texture.
- 27. A method in accordance with Claim 25 wherein the substrate is a biaxially textured metal or alloy.
- 28. A method in accordance with Claim 25 wherein the substrate is biaxially textured Ni or a Ni alloy.
- 29. A method in accordance with Claim 25 wherein the substrate is a biaxially textured metal or alloy.
- 30. A method in accordance with Claim 25 wherein the substrate is a single crystal metal substrate.
- 31. A method in accordance with Claim 25 wherein the deposition is performed using magnetron sputtering.
- 32. A method in accordance with Claim 25 wherein the deposition is performed using electron beam evaporation.
- 33. A method in accordance with Claim 25 wherein the deposition is performed using pulsed laser ablation.

25

- 34. A method in accordance with Claim 25 wherein the deposition is performed using sol-gel deposition.
- 35. A method in accordance with Claim 25, further comprising the steps of:
  - depositing onto said surface of last layer at least one oxide layer from a group comprising of but not limited to MgO, CeO<sub>2</sub>, YSZ, LaAlO<sub>3</sub>, SrTiO<sub>3</sub>, BaPbO<sub>3</sub>, LaNiO<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub>, RE<sub>2</sub>O<sub>3</sub>.
- 36. A method in accordance with Claim 25, further comprising the steps of:
  - depositing onto said surface of last layer at least one electromagnetic
    device layer such as a superconducting oxide layer.
- A method in accordance with claim 35, further comprising the steps of:
  - depositing onto said surface of last layer at least one electromagnetic device layer such as a superconducting oxide layer.